WHAT IS CLAIMED IS:

1. A catheter pump comprising:

a catheter having a distal end portion and a proximal end portion, a channel communicating with said distal end portion for alternatingly passing a fluid in a direction away from said distal end portion towards said proximal end portion and in a direction away from said proximal end portion towards said distal end portion;

a connection at said proximal end for coupling the catheter to a displacement structure; and

a displacement structure;

said displacement structure communicating with said catheter for alternatingly applying suction for displacing fluid from said catheter to said displacement structure and applying pressure for displacing fluid from said displacement structure to said catheter; and

said catheter being dimensioned for positioning said distal end portion in the aorta of a human patient.

2. A catheter pump according to claim 1, dimensioned for positioning said distal end portion in a portion of the aorta downstream of an area where subclavian arteries connect to the aorta.

3. A catheter pump according to claim 1 or 2, said catheter being dimensioned for positioning said distal end portion in a portion of the aorta where arteries towards the abdominal organs connect to the aorta when the catheter is in a position inserted via an artery in the area of the groin.

4. A catheter pump according to claim 1, further comprising an inlet passage and an outlet passage proximally spaced from said inlet passage, and a valve arrangement for at least restricting outward blood flow via said inlet passage and inward blood flow via said outlet passage.

5. A catheter pump according to claim 4, wherein said spacing between said inlet passage and said outlet passage is preferably at least 8 cm and more preferably at least 13 cm and preferably at most 25 cm and more preferably at most 20 cm.

6. A catheter pump according to claim 4, wherein said proximal end is spaced 20 to 40 cm, measured along said catheter, from said outlet passage.

7. A catheter pump according to claim 1, further comprising an inlet passage and a channel extending in longitudinal direction through the catheter, which channel is adapted for providing continuous open communication of said displacement structure with said inlet passage for alternatingly displacing fluid in and out via said inlet passage.

8. A catheter pump according to claim 7, having a length measured from a distal tip to the proximal end of at least 35 cm and at most 50 cm.

9. A catheter pump according to claim 1, wherein said catheter has an external diameter of at least 4 mm and at most 7 mm.

10. A catheter pump according to claim 1, wherein said catheter has an external diameter of at least 5 mm and at most 6 mm.

11. A catheter pump according to claim 1, wherein the catheter wall includes at least one reinforcement filament and has a thickness of at most 0.2 to 0.5 mm.

12. A catheter pump according to claim 4, wherein said valve arrangement includes a valve body movable between an inlet position at least restricting flow through said outlet passage and allowing flow through said inlet passage and an outlet position at least restricting flow through said inlet passage and allowing flow through said outlet passage,

further comprising a wall bounding a lumen, wherein

said outlet passage is formed by an opening in said wall; and

said valve body:

- is a plate-shaped member,
- when in said inlet position, extends closely along and inside a projection of said wall in the area of said outlet opening,
- when in said outlet position, extends transversely across a section of said lumen on a distal side of said outlet opening, and
- is pivotable between said inlet position and said outlet position about an axis extending across a central portion of said lumen and centrally located behind said outlet opening.

13. A catheter pump according to claim 12, wherein

said lumen has a round cross section;

said outlet opening is round in a view frontal thereto and wedge-shaped in a side view perpendicular to said frontal view; and

said plate-shaped member is curved about an axis of curvature transverse to said pivoting axis, round in frontal view and wedge-shaped in a side view perpendicular thereto.

14. A catheter pump according to claim 13, wherein, in side view, opposite sides of said wedge shapes of said outlet opening and of said valve body extend at an angle of 75–105° to each other.

15. A catheter pump according to claim13, wherein, in said inlet position, said valve body has a frontal projected area having a first portion on a proximal side of said pivoting axis and a second portion on a distal side of said pivoting axis, said first portion being larger than said second portion.

16. A catheter pump according to claim 12, wherein, in said outlet position, said valve body has a frontal projected area having a first portion on a side of said pivoting axis where said outlet opening is located and a second portion on an opposite side of said pivoting axis, said first portion being larger than said second portion.

17. A catheter pump according to claim 16, wherein said pivoting axis extends across said lumen, and wherein said lumen has a cross-sectional area having a portion on a side of said pivoting axis where said outlet opening is located and a portion on an opposite side of said axis, said portion on said side of said pivoting axis where said opening is located being larger than said portion on said opposite side of said pivoting axis.

18. A catheter pump according to claim 4, wherein said valve arrangement includes a valve body movable between an inlet position at least restricting flow through said outlet passage and allowing flow through said inlet passage and an outlet position at least restricting flow through said inlet passage and allowing flow through said outlet passage, further comprising a wall bounding a lumen, wherein

said outlet passage is formed by an opening in said wall; and

said valve body:

- is a plate-shaped member,
- when in said inlet position, extends closely along and inside a projection of said wall in the area of said outlet opening,
- has a deflector projecting into said lumen from a proximal side of said valve body,
- when in said outlet position, extends diagonally across a section of said lumen in the area of said outlet opening,

- is pivotable between said inlet position and said outlet position, and
- is hinged to said wall in an area closely adjacent a distal end portion of said outlet opening.

19. A catheter pump according to claim 1, wherein said drive structure and said catheter are adapted for generating maximum drive pressure in the area of said distal end portion of at least 100 and preferably 200 mmHg and at most 500 and preferably 400 mmHg

20. A catheter pump according to claim 1, wherein said drive structure is adapted for generating a drive pressure of at least 300 mmHg and at most 600 mmHg

21. A catheter having a distal end portion and a proximal end portion, a channel communicating with said distal end portion for alternatingly passing a fluid in a direction away from said distal end portion towards said proximal end portion and in a direction away from said proximal end portion towards said distal end portion; and

a connection at said proximal end for coupling the catheter to a displacement structure for alternatingly applying suction for displacing fluid from the catheter to said displacement structure and applying pressure for displacing fluid from said displacement structure to the catheter;

said catheter being dimensioned for positioning said distal end portion in the aorta of a human patient.

22. A method for generating pulsations in the blood flow towards the organs of a patient including:

inserting a catheter into the aorta of a patient and bringing the catheter in a position having a distal end portion in the aorta of the patient; and

alternatingly withdrawing a fluid from the aorta and feeding a fluid to the aorta via said catheter, such that pressure pulsations are generated in an area of the aorta where the distal end portion of the catheter is located.

23. A method according to claim 22, wherein said distal end portion is positioned in a portion of the aorta downstream of an area where subclavian arteries connect to the aorta.

24. A method according to claim 23, wherein said distal end portion is positioned in a portion of the aorta where arteries leading from the aorta to at least one of the abdominal organs connect to the aorta.

25. A method according to claim 24, wherein said catheter is inserted into the aorta via an artery in the area of the groin.